

Appln No. 10/587,194
Amdt date May 28, 2009
Reply to Office action of November 28, 2009

REMARKS/ARGUMENTS

Claims 1-19 are now in the application. Claims 1, 13-15, and 17-18 have been amended. Claim 19 has been added. The Applicant respectfully requests reconsideration and allowance of the application in view of the amendments and the following remarks.

Rejection Under 35 U.S.C. §112

Claims 12-15 are rejected as being indefinite for the use of the term "about" in claim 12 and the term "selected material" in claims 13-15, for the reasons set forth on pages 2-3 of the Office action.

With respect to claim 12, the Applicant respectfully submits that the claim terminology of "between about 50 nm and about 5000 nm" is definite because this measurement could clearly be assessed by a person having ordinary skill in the art through the use of a suitable measuring instrument. *See MPEP 2173.05(b)* ("a limitation defining the stretch rate of a plastic as 'exceeding about 10% per second' is definite because infringement could clearly be assessed through the use of a stopwatch.)

With respect to claims 13-15, the Applicant has amended claims 13-14 by deleting "selected material" and amended claim 15 by deleting "selected."

In addition, the Applicant has amended claim 18, which depends from Claim 13, to be consistent with the amendment to claim 13.

As such and in view of the foregoing remarks and amendments, the Applicant respectfully requests that the rejections of the claims under 35 USC §112, second paragraph, be withdrawn.

Rejection Under 35 U.S.C. §§ 102 and 103

Claims 1-7, 9-11 and 16 are rejected as being fully anticipated by Enloe 2003/0186131, for the reasons set forth on pages 3-4 of the Office action. Claim 8 is rejected as being obvious over Enloe, in view of Klebanoff et al. 6,492,067, for the reasons set forth on pages 5-6 of the

Appln No. 10/587,194
Amdt date May 28, 2009
Reply to Office action of November 28, 2009

Office action. Claim 13 is rejected as being obvious over Enloe, in view of Levinson et al. 6,623,893, for the reasons forth on pages 6-7 of the Office action. Claim 18 is rejected as being obvious over Enloe, in view of Levinson and Angelopoulos et al. 2002/0012876, for the reasons set forth on page 7 of the Office action.

In addition, Claims 1 and 12 are rejected as being obvious over Scott et al. 5,935,733, for the reasons set forth on page 8 of the Office action. Claims 14-15 and 17 are rejected as being obvious over Scott, in view of Kurt 2004/0130693, for the reasons set forth on pages 9 and 10 of the office action.

The Applicant respectfully traverses these rejections as follows.

First, the Applicant would like to note that each of independent claim 1 has been amended to now recite, among other things, "protective means (SP) contacting the reflective structure (SIR) and transparent to the said wavelength and contrived to keep interfering particles (PP) at a distance (H) from the patterns (MF) which is greater than or equal to one of two values taken from a depth of focus (doF) of the device and a height of pattern/interfering particle (h) associated with a tolerated percentage of absorption of photons by the interfering particles (PP) which is a function of their diameter (d)" (emphasis added).

Enloe et al. comprises pellicle spacers which support a pellicle. Based on the comments of the Office action, it is the Applicant understanding that the Examiner has identified the assembly of the pellicle spacers and the pellicle as corresponding to the protective means of the claimed invention.

First of all, the Applicant would like to point out that the structure suggested by Enloe et al. is much more fragile than that of the claimed invention. Since the spacers 1200 are not transparent to the wavelength, they have to be set on the outer periphery of the reflective structure 1100, so as to not interfere with the selected patterns.

Furthermore, these spacers 1200 are 1 mm to 6 mm high, which means that in no way can the actual pellicle (which is transparent) be in contact with the reflective structure as is in the present claimed invention.

Appln No. 10/587,194
Amdt date May 28, 2009
Reply to Office action of November 28, 2009

All these differences stem from the principal fact that Enloe et al., as the rest of the prior art, is absolutely unable to provide a pellicle which is thick enough to protect from the interfering particles without interfering with the wavelength (i.e., becoming non-transparent to the wavelength).

As a result, Enloe et al. teaches the use of the spacers which elevate the pellicle high enough to protect from the interfering particles. Given the suggested modification, the Applicant respectfully believe that amended claim 1 (which recites "protective means (SP) contacting the reflective structure (SIR) and transparent to the said wavelength and contrived to keep interfering particles (PP) at a distance (H) from the patterns (MF) which is greater than or equal to one of two values taken from a depth of focus (doF) of the device and a height of pattern/interfering particle (h) associated with a tolerated percentage of absorption of photons by the interfering particles (PP) which is a function of their diameter (d)") should not be anticipated by Enloe et al.

In addition, because of the conventional wisdom, which include the teaching of Enloe, that "protective means (SP) contacting the reflective structure (SIR)" would not work, a person having ordinary skill in the art at the time of invention would not have designed such a structure with "protective means (SP) contacting the reflective structure (SIR)" as claimed. *See Kloster Speedsteel AB v. Crucible Inc.*, 793 F.2d 1565, 230 U.S.P.Q. 81 (Fed. Cir. 1986) (That the inventor achieved the claimed invention by doing what those skilled in the art suggested should not be done is a fact strongly probative of nonobviousness). Thus, claim 1 should not even be considered obvious over Enloe et al. even in view of Scott et al.

In addition, concerning Scott et al., the Applicant respectfully disagrees with the Examiner's opinion that the reference is even analogous to the present claimed invention. More precisely, Scott et al describes a capping layer which is merely made to provide a highly planar surface to the mask in order to enable easier cleaning before adding the pellicle (i.e., the protective means for protecting from interfering particles) and in order to provide some resistance.

While it is true that Scott et al. discloses providing a capping layer as thick as possible, it is not true that this would render claim 1 obvious. This is because Scott et al. recites that "the

Appln No. 10/587,194
Amdt date May 28, 2009
Reply to Office action of November 28, 2009

transmissive capping material 300 is preferably the same material as the transmissive layer 260" (column 10, lines 48-50). This means that the material used is most likely silicon (Si). However, it is known by a person skilled in the art that a pellicle formed of this material which has the depth to protect from interfering particles is not transparent to the claimed wavelength.

In fact, the layer disclosed in Scott et al. is generally 50 to 80 nm thick, which is thirty times less than the typical depth of the protective means of the claimed invention. Consequently, not only is amended claim 1 not obvious over Scott et al., but also there is no way that Scott et al. could be used in any useful way to provide a teaching on protecting from interfering particles.

In the case of Scott et al., this is due to the fact that protecting from interfering particles is not considered. The only interest of Scott et al. is to provide a capping layer as described above.

Consequently, one can see that none of the cited documents discloses protective means comparable to that of the amended claim 1, that is in contact with the reflective structure at the level of said selected patterns. This enables a much more compact mask with much more protected and easier to produce protective means.

As such, in view of the forgoing, the Applicant respectfully submits that claim 1 is patentable over Enloe and/or because these references do not teach or suggest at least the limitations of "protective means (SP) contacting the reflective structure (SIR) and transparent to the said wavelength and contrived to keep interfering particles (PP) at a distance (H) from the patterns (MF) which is greater than or equal to one of two values taken from a depth of focus (doF) of the device and a height of pattern/interfering particle (h) associated with a tolerated percentage of absorption of photons by the interfering particles (PP) which is a function of their diameter (d)" as recited in claim 1.

Dependent claims 2-18 depend (directly or indirectly) from claim 1. As such, these dependent claims incorporate all the terms and limitations of claim 1 in addition to other limitations, which together further patentably distinguish them over the references made of record.

Appln No. 10/587,194

Amdt date May 28, 2009

Reply to Office action of November 28, 2009


New Claim

New independent claim 19 has been added and should be allowable for at least reciting a method of forming a mask (MM) with patterns (MF), for a lithography device operating by reflection of a beam of photons of a wavelength less than about 120 nm, and protecting the patterns (MF) from interfering particles (PP), the method comprising "forming protective means (SP) transparent to the said wavelength on the reflective structure (SIR); and separating a front part of the protective means (SP) from the front face of the reflective structure (SIR) to be a distance (H) not less than a depth of focus (doF) of the device or a height of pattern/interfering particle (h) associated with a tolerated percentage of absorption of photons by the interfering particles (PP) which is a function of their diameter (d)."

In view of the foregoing, the Applicant respectfully submits that claims 1-19 are in condition for allowance. Reconsideration and withdrawal of the rejections are respectfully requested, and a timely Notice of Allow ability is earnestly solicited. If there are any remaining issues that can be addressed over the telephone, the Examiner is encouraged to call the Applicants' attorney at the number listed below.

Respectfully submitted,

CHRISTIE, PARKER & HALE, LLP

By 
Peter C. Hsueh
Reg. No. 45,574
626/795-9900

PCH/cah

CAH PAS851830.1-* -05/28/09 10:17 AM